NOVA
NEWSLETTER OF THE VANCOUVER CENTRE RASC
VOLUME 2025 ISSUE 4 JULY AUGUST 2025

Imaging Update
by Marla Daskis

The Imaging Group has been busy, recently, working on the upgrades to the Vancouver RASC Observatory to enable remote management.

Recent meetings have been about planning and specifications, and on June 21, Rick organized our first work party, consisting of Bart Adrian, Kerry Werry, Gerald Morris, Ab Sayani, Tyler Palmer, Jim Foote, Brendan Schneider, Rick Schneider, Alan Jones and Ron and Marla Daskis.

The party traveled up to the VRO and began working on installing the cellular modem and the solar panels, as well as dew control in the telescope dome.

The cellular modem team first had to remove a decommissioned electrical wire from the pole—and fortunately for us, Alan still had his pole climbing gear! Alan did several


Installing the solar panels at the VRO

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JULY 10 **SFU**
Our July lecture has been cancelled due to the speaker falling ill. We will reschedule for a future date.
SFU

NO MEETING IN AUGUST

SEPTEMBER 11 **SFU**
Speaker TBD. Watch Meetup for updates.
SFU

Members' Gallery

NGC 4565 by Rick Schneider

NGC 4565 (also known as the Needle Galaxy or Caldwell 38) is an edge-on spiral galaxy about 30 to 50 million light-years away in the constellation Coma Berenices. It lies close to the North Galactic Pole and has a visual magnitude of approximately 10. It is known as the Needle Galaxy for its narrow profile. First recorded in 1785 by William Herschel, it is a prominent example of an edge-on spiral galaxy. (https://en.wikipedia.org/wiki/NGC_4565)

Taken April 16, 2025 from the Trottier Observatory by RASC imaging group members.

1.5 hours of LRGB data

President's Message: Averted Vision

by Robert Conrad

Observational astronomy often reveals the universe at the very edge of human perception. When gazing through a telescope at faint galaxies, nebulae, or distant star clusters, even experienced astronomers can struggle to see elusive celestial objects. One of the most effective techniques to enhance visibility is averted vision—a simple yet powerful method that leverages how the human eye works to detect faint light more effectively.

What Is Averted Vision?

Averted vision involves intentionally looking slightly away from a faint object, rather than directly at it. This may seem counterintuitive at first, but it's grounded in the biology of our eyes. The human retina contains two types of photoreceptor cells: cones and rods.

- Cones, concentrated in the central part of the retina (the fovea), are responsible for sharp central vision and colour detection but are less sensitive in low light.

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About RASC

The RASC Vancouver Centre meets at 7:30 PM on the second Thursday of every month at SFU's Burnaby campus (see map on page 4). Guests are always welcome. In addition, the Centre has an observing site where star parties are regularly scheduled.

Membership is currently $104.00 per year ($61.10 for persons under 21 years of age; family memberships also available) and can be obtained online, at a meeting, or by writing to the Treasurer at the address below. Annual membership includes the invaluable Observer's Handbook, six issues of the RASC Journal, and, of course, access to all of the club events and projects.

For more information regarding the Centre and its activities, please contact our P.R. Director.

NOVA, the newsletter of the Vancouver Centre, RASC, is published on odd-numbered months. Opinions expressed herein are not necessarily those of the Vancouver Centre.

Material on any aspect of astronomy should be e-mailed to the editor or mailed to the address below.

Remember, you are always welcome to attend meetings of Council, held on the first Thursday of every month at 7:30pm in the Trottier Studio in the Chemistry wing of the Shrum Science Centre at SFU. Please contact a council member for directions.

2025 Vancouver Centre Officers

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president@rasc-vancouver.com

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Library

The centre has a large library of books, magazines and old NOVAs for your enjoyment. Please take advantage of this club service and visit often to check out the new purchases. Suggestions for future library acquisitions are appreciated.

On the Internet

rasc-vancouver.com
astronomy.meetup.com/131/
www.facebook.com/RASC.Van
www.instagram.com/rascvancouver/
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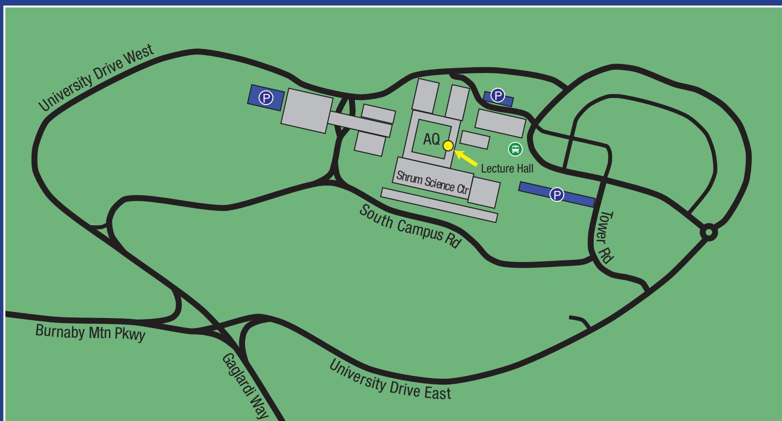
Map to Meeting Site



Our July meeting is in room AQ 3149 of the Academic Quadrangle, on the east concourse near to the cafeteria, as indicated by the arrow on the map.

Pay parking is available at several locations located around campus (indicated as "P" on the map).

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- Rods, which are more numerous in the peripheral retina, are highly sensitive to dim light and better at detecting faint objects—especially those lacking colour.

When you look directly at a dim astronomical target, you're using the less light-sensitive cones. By shifting your gaze slightly to the side, you bring the image onto a rod-dense part of the retina, significantly improving your ability to detect faint light.

Why Averted Vision Matters in Astronomy

Averted vision is not just a trick—it's a fundamental technique in visual astronomy, especially for:

- Detecting faint deep-sky objects such as planetary nebulae, distant galaxies, or dim globular clusters.
- Enhancing contrast and detail, especially for low-surface-brightness objects.
- Maximizing the performance of smaller telescopes, which may not gather as much light as larger instruments.

Even with large, modern telescopes, there are times when an object is only marginally visible with direct vision but becomes clearer when viewed indirectly.

How to Use Averted Vision Effectively

1. Learn Your "Sweet Spot"

Everyone's retina is slightly different. Some observers see best when looking 10–15° to the side of an object, while others benefit from looking slightly above or below. Practice with familiar faint objects to find your own most responsive area.

2. Use a Steady Mount and Good Optics

Any vibration or instability in your telescope can interfere with this technique. A solid mount and clean optics ensure that even the subtlest visual cues are preserved.

3. Dark Adaptation

Spend at least 20–30 minutes away from artificial light before attempting to observe faint targets. Even brief exposure to bright light can drastically reduce your ability to see dim objects.

4. Shield Your Eyes

Use a hood, blackout cloth, or your hand to block stray light from nearby sources. Observing from dark-sky sites also dramatically improves results.

5. Breathe Normally and Blink Occasionally

Oxygen affects the sensitivity of your retinas. Don't hold your breath while concentrating—normal, relaxed breathing ensures optimal performance. Also, don't forget to blink; dry eyes can scatter light and degrade your vision.

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Strategies for Learning Constellations

by Robert Conrad & Andrew Krysa

The importance of learning to identify the constellations that are visible from your location can not be overstated. There have been a few occasions where I considered leaving the telescope behind on an observing night to focus solely on watching the movement of the heavens and watching the constellations move with the celestial sphere. It can be overwhelming once you learn that there are likely more than 50 constellations visible from your location. One needs a strategy not only to know when these constellations are visible but how to easily identify them as they change their orientation while they move across the sky. Your mind can sometimes find it very difficult to recognize a constellation that you might have learned when rising in the east but may look radically different when its directly overhead or at the meridian or setting in the west. To help with this, it's important to not simply recognize the shape of the constellation and be able to point it out in the sky but to also be able to point out each of the bright individual stars in that constellation that are connected by lines in any good sky atlas. It's important also to implant firmly in your mind the relative positions of the main stars in the constellation to each other. One constellation that often throws people off is Perseus, an almost circumpolar constellation visible at least 10 months of the year, which looks very different when oriented in different positions in the sky as it follows the celestial movement along with all the other constellations. So many people learn to identify the triangular shape at the top of Perseus which represents his head or his shoulder in some interpretations. I have the size and shape of this triangle firmly planted in my mind and also how the nearest stars connected to that triangle look and how they are angled to this triangle. Cassiopeia, which is a very recognizable W-shaped constellation, is very near Perseus and I also have it implanted in my head how that triangle in Perseus is oriented to Cassiopeia. There are also many tricks you can make up for yourself in this way, such as two stars in a row pointing towards a major star in a constellation, like the two pointer stars at the end of the scoop in the Big Dipper point to Polaris, or any such trick. Identifying the main stars in a constellation will help you immensely when you start to star hop. If you learn the stars that make up the constellation, you are in a much better position to start your starhop from a star that is closest to the intended object. It also saves time as you don't have to look at the star atlas all the time to figure out which star you need to start from. For example, Leo is a constellation that is made up of at least 14 main stars connected by

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Membership has its Privileges!

Are you tired of looking at the same objects again and again (planets, moon, etc.)? Is your telescope collecting dust because it's hard to locate deep sky objects? Would you like to bring your observing to a stellar level? Robert Conrad, our observing director, leads the Vancouver RASC observing group and invites you to join by sending him an email at observing@rasc-vancouver.com. Some of the benefits of belonging to this group include:

- Hands on training on how to operate the SFU Trottier observatory
- Weekly observing sessions at the observatory or at dark sky locations
- One-one-one coaching on how to locate thousands of objects in the night sky
- Attend small interactive seminars delivered by Robert on a range of topics including failsafe star-hopping, charting challenging objects and understanding the motions of the cosmos
- Learn to make your telescope dance by locating objects such as asteroids, nova, and supernovae
- Spectroscopy and imaging training from Howard Trottier and an opportunity to collaborate on observatory research projects
- Updates on observable sky events happening during the week like asteroid/comet/deep sky conjunctions
- Access to observing guides and lists that Robert created that took hundreds of hours to create and will help with planning observing sessions
- Knowledge and expertise from other observing group members
- Learn how to quickly and efficiently find and star-hop to deep sky objects using a range of binoculars and telescopes

Upcoming Events

August

16 - 24 – Mt. Kobau Star Party

25 - 28 – Nahatlatch Valley Star Party

December

11 – AGM

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ascents during the day, successfully removing the electrical wire, and after some configuration by Kerry and Bart, installing both the cellular antenna and a new wire connecting the antenna to the building. Bart climbed the extension ladder and worked on attaching the box to hold the modem while Kerry and Ron braced the ladder. Further work needs to be done to configure the modem and connect the wires, but climbing the pole won't be needed for those steps (the ladder will work!). Alan had support from Kerry, Bart, Marla, and Ron acting as his ground crew, who relayed tools and equipment up the pole using a rope and pulley.

During this time, Tyler, Ab, Gerald, Jim, Brendan and Rick worked on installing the frame for the solar panels to the side of the observatory, and then mounting the panels to the frame. A big thank-you to Tyler for organizing the fabrication of the aluminum frame to hold the panels—professionally done, lightweight, and works like a dream! The team created the support to hold the frame to the building and then was able to mount the three panels to the frame. More work is required to enable the mechanism required to adjust the angle of the frame, which enables us to maximize the energy input from the sun depending on the time of year.

Jim was also able to set up the dew control for the telescope in the dome—this will be key to extending

Alan Jones climbs a pole to remove decommissioned electrical wire

the number of days in a year we can use the telescope.

Next steps will be to get all the components tied together and talking to each other. The next date for a work party is still to be determined—if you are interested in joining the Imaging Group, please send an email to imaging@rasc-vancouver.com (note you must be a RASC Vancouver member to join). ✸

6. Use the Right Magnification

Sometimes a slightly higher or lower magnification can help make an object more noticeable with averted vision. Experiment with different eyepieces to find the best balance between image size and brightness.

7. Practice Patience

Some objects require more than just a quick glance. Use slow, controlled scanning movements around the target area and allow your eyes time to register the image.

Real-World Examples:

- The Horsehead Nebula (Barnard 33) in Orion is nearly invisible through most amateur telescopes without averted vision and ideal conditions.
- NGC 891, a faint edge-on galaxy in Andromeda, can be revealed with surprising clarity through an 8” scope using this technique.
- M74, often called the “phantom galaxy,” is notoriously difficult to see without employing averted vision—even though it is technically within reach of mid-sized telescopes.

Conclusion

Averted vision is a cornerstone of visual astronomy. It unlocks the potential of your telescope and your eyes, allowing you to see more of the universe than you ever thought possible. By understanding the physiology behind the technique and practicing its proper use, you can make faint celestial treasures come alive in your eyepiece. Like any skill, it improves with time, patience, and experience—but the rewards are truly astronomical. ✸

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imaginary constellation lines that anyone can see in a star atlas or app, etc. These stars are represented by Greek letters. The brightest star in the constellation is usually designated as α, the first letter of the Greek alphabet, the second brightest is designated as α, the second letter of the Greek alphabet, etc. So a star’s name is its Greek letter designation followed by the name of the constellation in which it lies. For example, the brightest star in Leo is α Leonis. Often the brightest stars in the sky will also have their own special name that either comes from ancient Latin or Greek or Arabic, so α Leonis is also known as the star Regulus. The second brightest star in Leo is β Leonis and it also just happens to have its own special name, Denebola. Some large constellations that have many stars can run out of Greek letters so then numbers are used followed by the constellation name to designate these stars. So if you wanted to find the bright galaxies M65 and M66 which are in the constellation Leo, and you know the designations and locations of the stars in Leo, you would be able to point your telescope at θ Leonis without the time consuming and cumbersome task of looking for this star in a star atlas first and the galaxies would be a short star hop from θ Leonis.

Some atlases show the imaginary lines connecting the stars in a constellation in slightly different ways. A good example is the constellation Camelopardalis, the giraffe. This faint constellation is often represented differently depending on the sky atlas. In these cases, you would likely pick your favourite representation that is easiest for you to identify and I will often amend the atlas’ representation slightly if it helps me to identify the constellation better. With faint constellations like Camelopardalis or Monoceros, you will often start your star hop in a brighter star in a nearby constellation.

As countries have borders, the celestial sphere is also broken up into imaginary boundaries between the constellations. Originally the constellations were defined only informally by the shapes that their stars made up, many of which were already named in ancient times. However, as more celestial discoveries came along, it was decided by the International Astronomical Union in 1930 that it would be more useful to divide the sky into regions with boundary lines. So today the entire celestial sphere, including the northern and southern hemispheres, is divided by these lines into 88 constellation boundary areas. Not all stars within a constellation boundary area are necessarily connected by the imaginary constellation lines we see in Sky atlases. For example, the stars λ and ζ Cassiopeiae are not connected by the Cassiopeia constellation lines which connect the main stars of that constellation but are still within the boundary area of Cassiopeia and so are considered part of that constellation. ✸

The Orion Nebula (M42) by Mark Germani

The iconic Orion Nebula (M42) is a region of diffuse nebulosity and star formation, and consists of both emission and reflection nebulosity which inspired me to collect both broadband and narrowband data using multiple exposure lengths to prevent the brighter areas of the core from overexposing. With the smaller square sensor of my camera, a 2-panel mosaic was necessary to capture the nebula in its entirety. In total, 9 different datasets comprising roughly 18 hours of data were combined to create this HaRGB HDR image.

If you'd like more specific details about the image, the Astrobin link is here: https://app.astrobin.com/i/bxqne4.